In The Claims:

WHAT IS CLAIMED IS:

1. (original) In a three-phase power system, an apparatus for generating a data value representative of instantaneous three-phase power factor comprising:

a processor for sampling voltage levels and current levels from power source lines of said three-phase power system to form a set of voltage and current levels, said processor being responsive to said set of voltage and current levels to generate said data value representative of said instantaneous three-phase power factor.

2. (original) The apparatus of claim 1 wherein said sampling of said voltage levels and current levels from said power source lines of said three-phase power system to form said set of voltage and current levels is done simultaneously by said processor.

3. (original) The apparatus of claim 1 wherein said processor is responsive to a voltage level subset of said set of voltage and current levels to generate real and imaginary component data values representative of a voltage phasor as part of generating said data value representative of said instantaneous three-phase power factor.

4. (original) The apparatus of claim 3 wherein said voltage level subset comprises at least two of:

a first phase voltage level sampled from a first source line of said power source lines relative to a common voltage reference;

a second phase voltage level sampled from a second source line of said power source lines relative to a common voltage reference; and

a third phase voltage level sampled from a third source line of said power source lines relative to a common voltage reference.

5. (original) The apparatus of claim 4 wherein said voltage level subset comprises:

a first phase voltage level sampled from a first source line of said power source lines relative to a common voltage reference;

a second phase voltage level sampled from a second source line of said power source lines relative to a common voltage reference; and

a third phase voltage level sampled from a third source line of said power source lines relative to a common voltage reference.

6. (original) The apparatus of claim 3 wherein said voltage level subset comprises at least two of:

a first line voltage level sampled from a first source line relative to a second source line of said power source lines;

a second line voltage level sampled from said second source line relative to a third source line of said power source lines; and

a third line voltage level sampled from said third source line relative to said first source line of said power source lines.

7. (original) The apparatus of claim 6 wherein said voltage level subset comprises:

a first line voltage level sampled from a first source line relative to a second source line of said power source lines;

a second line voltage level sampled from said second source line relative to a third source line of said power source lines; and

a third line voltage level sampled from said third source line relative to said first source line of said power source lines.

8. (original) The apparatus of claim 1 wherein said processor is responsive to a current level subset of said set of voltage and current levels to generate real and imaginary component data values representative of a current phasor as part of generating said data value representative of said instantaneous three-phase power factor.

9. (original) The apparatus of claim 8 wherein said current level subset comprises at least any two of:

a first phase current level sampled from a first source line of said power source lines;

a second phase current level sampled from a second source line of said power source lines; and

a third phase current level sampled from a third source line of said power source lines.

10. (original) The apparatus of claim 9 wherein said current level subset comprises:

a first phase current level sampled from a first source line of said power source lines;

a second phase current level sampled from a second source line of said power source lines; and

a third phase current level sampled from a third source line of said power source lines.

11. (original) The apparatus of claim 8 wherein said current level subset comprises at least any two of:

a first line current level sampled from a first source line of said power source lines;

a second line current level sampled from a second source line of said power source lines; and

a third line current level sampled from a third source line of said power source lines.

12. (original) The apparatus of claim 11 wherein said current level subset comprises:

a first line current level sampled from a first source line of said power source lines;

a second line current level sampled from a second source line of said power source lines; and

a third line current level sampled from a third source line of said power source lines.

13. (original) The apparatus of claim 1 further comprising said processor sampling a plurality of sets of voltage and current levels at a pre-determined sampling rate over a pre-determined time interval to generate a set of instantaneous three-phase power factor data values.

14. (original) The apparatus of claim 13 wherein the sampling rate is selected to distribute the sample locations in the line cycle period and to provide representation sampling of instantaneous power factor values.

15. (cancelled)

16. (original) The apparatus of claim 1 further comprising said processor sampling a plurality of sets of voltage and current levels at a pre-determined sampling rate to continuously generate a corresponding plurality of instantaneous three-phase power factor data values.

17. (original) The apparatus of claim 16 further comprising said processor continuously checking if each of a pre-determined, consecutive number of most recent data values of said corresponding plurality of instantaneous three-phase power factor data values is less than or equal to zero (non-positive).

18. (original) The apparatus of claim 17 wherein said processor declares a detection of a momentary power loss condition if each of said pre-determined, consecutive number of most recent data values of said corresponding plurality of instantaneous three-phase power factor data values is less than or equal to zero (non-positive).

19. (original) The apparatus of claim 18 wherein said processor commands that a load of said three-phase power system be at least temporarily disconnected from said power source lines when said processor declares said detection of said momentary power loss condition.

20. (original) In a three-phase power system, a method for generating a data value representative of instantaneous three-phase power factor comprising:

sampling voltage levels and current levels from power source lines of said three-phase power system to form a set of voltage and current levels; and

generating said data value representative of said instantaneous three-phase power factor in response to said set of voltage and current levels.

21. (original) The method of claim 20 wherein said sampling of said voltage levels and current levels from said power source lines of said three-phase power system to form said set of voltage and current levels is done simultaneously.

22. (original) The method of claim 20 further comprising generating real and imaginary component data values representative of a voltage phasor in response to a voltage level subset of said set of voltage and current levels as part of generating said data value representative of said instantaneous three-phase power factor.

23. (original) The method of claim 22 wherein said voltage level subset comprises at least any two of:

a first phase voltage level sampled from a first source line of said power source lines relative to a common voltage reference;

a second phase voltage level sampled from a second source line of said power source lines relative to a common voltage reference; and

a third phase voltage level sampled from a third source line of said power source lines relative to a common voltage reference.

24. (original) The method of claim 23 wherein said voltage level subset comprises:

a first phase voltage level sampled from a first source line of said power source lines relative to a common voltage reference;

a second phase voltage level sampled from a second source line of said power source lines relative to a common voltage reference; and

a third phase voltage level sampled from a third source line of said power source lines relative to a common voltage reference.

25. (original) The method of claim 22 wherein said voltage level subset comprises at least any two of:

a first voltage level sampled from a first source line relative to a second source line of said power source lines;

a second line voltage level sampled from said second source line relative to a third source line of said power source lines; and

a third line voltage level sampled from said third source line relative to said first source line of said power source lines.

26. (original) The method of claim 25 wherein said voltage level subset comprises:

a first voltage level sampled from a first source line relative to a second source line of said power source lines;

a second line voltage level sampled from said second source line relative to a third source line of said power source lines; and

a third line voltage level sampled from said third source line relative to said first source line of said power source lines.

27. (original) The method of claim 20 further comprising generating real and imaginary component data values representative of a current phasor in response to a current level subset of said set of voltage and current levels as part of generating said data value representative of said instantaneous three-phase power factor.

28. (original) The method of claim 27 wherein said current level subset comprises at least any two of:

a first phase current level sampled from a first source line of said power source lines;

a second phase current level sampled from a second source line of said power source lines; and

a third phase current level sampled from a third source line of said power source lines.

29. (original) The method of claim 28 wherein said current level subset comprises:

a first phase current level sampled from a first source line of said power source lines;

a second phase current level sampled from a second source line of said power source lines; and

a third phase current level sampled from a third source line of said power source lines.

30. (original) The method of claim 27 wherein said current level subset comprises at least any two of:

a first line current level sampled from a first source line of said power source lines;

a second line current level sampled from a second source line of said power source lines; and

a third line current level sampled from a third source line of said power source lines.

31. (original) The method of claim 30 wherein said current level subset comprises:

a first line current level sampled from a first source line of said power source lines;

a second line current level sampled from a second source line of said power source lines; and

a third line current level sampled from a third source line of said power source lines.

32. (original) The method of claim 20 further comprising sampling a plurality of sets of voltage and current levels at a pre-determined sampling rate over a pre-determined time interval to generate a set of instantaneous three-phase power factor data values.

33. (original) The method of claim 32 wherein the sampling rate is selected to distribute the sample locations in the line cycle period and to provide representation sampling of instantaneous power factor values.

34. (cancelled)

35. (original) The method of claim 20 further comprising sampling a plurality of sets of voltage and current levels at a pre-determined sampling rate to continuously generate a corresponding plurality of instantaneous three-phase power factor data values.

36. (original) The method of claim 35 further comprising continuously checking if each of a pre-determined, consecutive number of most recent data values of said corresponding plurality of instantaneous three-phase power factor data values is less than or equal to zero (non-positive).

37. (original) The method of claim 36 further comprising declaring a detection of a momentary power loss condition if each of said pre-determined, consecutive number of most recent data values of said corresponding plurality of instantaneous three-phase power factor data values is less than or equal to zero (non-positive).

38. (original) The method of claim 37 further comprising commanding that a load of said three-phase power system be at least temporarily disconnected from said power source lines when said detection of said momentary power loss condition is declared.

39. (currently amended) A method of calculating power factor comprising the steps of:

determining ~~three~~ a set[~~s~~] of three currents respectively associated with three motor phases;

determining ~~three~~ a set[~~s~~] of three voltages respectively associated with three motor phases;

calculating current phasors and voltage phasors from the set[~~s~~] of currents and the set[~~s~~] of voltages; and

determining an instantaneous power factor from the calculated current and voltage phasors.

40. (currently amended) The method of claim 39 including the further step of averaging the instantaneous power factor over a line cycle to determine an average power factor.

41. (currently amended) An arrangement for calculating power factor comprising:

means for determining ~~three~~ a set[~~s~~] of currents respectively associated with three motor phases;

means for determining ~~three~~ a set[~~s~~] of three voltages respectively associated with three motor phases;

means for calculating current phasors and voltage phasors from the set[~~s~~] of currents and set[~~s~~] of voltages; and

means for determining an instantaneous power factor from the calculated current and voltage phasors.

42. (currently amended) The arrangement of claim 41 further including means for averaging the instantaneous power factor over a line cycle to determine an average power factor.